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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/650,063      | 08/26/2003  | Philip D. Nguyen     | 2003-IP-010487U1    | 5821             |

7590 07/13/2005

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EXAMINER

SUCHFIELD, GEORGE A

ART UNIT PAPER NUMBER

3676

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                               |                               |  |
|------------------------------|-------------------------------|-------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/650,063 | Applicant(s)<br>NGUYEN ET AL. |  |
|                              | Examiner<br>George Suchfield  | Art Unit<br>3676              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2005.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 15-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-29 are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/15/05</u> . | 6) <input type="checkbox"/> Other: _____  |

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1. This application contains claims directed to the following patentably distinct species of the claimed invention:

A. A method of strengthening and consolidating the near well bore region of a subterranean formation comprising a step of hydrajetting at least one slot in the formation.

Claims 1-14 exemplify this species.

B. A method of strengthening and consolidating the near well bore region of a subterranean formation comprising a step of acidizing to create a plurality of wormholes in the subterranean formation. Claims 15-29 exemplify this species.

2. Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, no claims are generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to

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be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. During a telephone conversation with Robert A. Kent on June 30, 2005 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-14.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 15-29 stand withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables

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having more than 50 pages of text are permitted to be submitted on compact discs.) or

REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a).

"Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(f) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(g) BRIEF SUMMARY OF THE INVENTION.

(h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(i) DETAILED DESCRIPTION OF THE INVENTION.

(j) CLAIM OR CLAIMS (commencing on a separate sheet).

(k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

5. The disclosure is objected to because of the following informalities:

The specification fails to include either a BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S), as required and noted above, or any reference to Figure 1 in the DETAILED DESCRIPTION OF THE INVENTION. Also, it would further be helpful if one or more drawing labels were included with the drawing and referenced in the specification.

Appropriate correction is required.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 4-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 4-13 are deemed further indefinite in being drawn to improper Markush groupings. As noted in MPEP Section 2173.05(h), the use of the term "comprising" or

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“comprises” is improper in setting forth the Markush grouping. Accordingly, in line 1 or 2 of each of these claims, the transitional phrase “comprises” must be changed to, -- is selected from the group consisting of -- or -- is -- .

Claim 12 is deemed further indefinite in that it is not clear what is meant by the term “HT”.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 2 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nguyen (2002/0070020).

Nguyen (note [0018]-[0020] and Figures 2, 3) discloses a process of strengthening, consolidating and eventually fracturing a subterranean formation including steps of hydrjetting a slot in the formation, injecting a hardenable resin composition into the slot and surrounding formation (note Figures 2, 3), and allowing the resin to set or cure.

Insofar as the hardenable resin composition clearly penetrates into the formation matrix surrounding the slot(s) in the process of Nguyen, it is deemed such resin formulation is inherently characterized as having a viscosity as recited in claim 1.

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10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 3-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (2002/0070020) as applied to claim 1 above, and further in view of Anderson et al (4,042,032).

Nguyen does not further disclose the specific resin formulation and components recited one or more of these claims, however, Anderson et al discloses a method of stabilizing a subterranean formation penetrated by a well(s) by injecting a hardenable resin consolidating fluid which may, in one embodiment, also include a hardening agent (note col. 5, lines 36-38), silane coupling agent and a surfactant. It is further noted that Anderson et al (col. 3, line 42 - col. 4, line 8) employs a consolidating fluid which is characterized as having a low viscosity, and

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further imparts and/or controls such initial low viscosity by the addition of a low-viscosity diluent to the consolidating fluid.

Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to employ the exemplary hardenable resin formulation of Anderson et al as the consolidating fluid “as is known in the art” (see Para [0019]) in the formation strengthening and consolidating process of Nguyen in order to impart desired characteristics to the hardenable resin formulation utilized, such as a controlled viscosity resin composition, as taught by Anderson et al (noted col. 3, line 52-col. 4, line 8).

The hardenable resin formulation of Anderson et al, as applied to the Nguyen process, includes the components recited in these claims. For example, as per claim 4, Anderson et al similarly employs a wide range of commercially-available hardenable resin, including one of more those recited or listed in the Markush grouping. Also, Anderson et al (noted col. col. 5, line 50 - col. 6, line 12) may employ one or more of a multitude of hardening agents, such as the amines and/or modified amines of claim 5.

As per claim 6, the amino silane coupling agents utilized in Anderson et al (noted col. 5, lines 1-33) appear to read on the corresponding amino silanes recited, with the “N-beta” designation in Anderson et al corresponding to the “N-2” portion of the silane formula(s) recited in claim 6.

As per claim 7, the consolidating fluid of Anderson et al, as utilized in the method of Nguyen, may utilize cationic surfactants as the surfactant component.

As per claim 8, Anderson et al (note col. 3, lines 30-42, and examples) may further employ a “furan-based” resin in their consolidating fluid, i.e., a furfuryl alcohol resin, furan-



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based resin embodiment of Anderson et al (col. 4, lines 1-8) may further include a diluent or solvent, as called for in claim 9.

As per claim 10, the process of Anderson et al (note col. 3, lines 30-42, and examples) may further employ a “phenolic-based” resin in their consolidating fluid, i.e., phenol-aldehyde resin.

As per claims 12, Anderson et al (note col. 3, lines 30-42, and examples) may further employ an “epoxy-based” resin in their consolidating fluid. It is deemed that such class of epoxy resins includes one or more of the epoxy resins recited in claim 12, as comprising commercially-available epoxy resins.

13. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (2002/0070020) in view of Anderson et al (4,042,032), as applied to claim 1 above, and further in view of Friedman et al (4,842,072) or Surles et al (5,712,314).

Friedman et al and Surles et al disclose the use of a furan or furfuryl alcohol hardenable resin for stabilizing a subterranean formation and further disclose the use of a hydrolyzable ester, such as butyl acetate, as a solvent or diluent for the furfuryl alcohol or furan.

Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to similarly employ a hydrolyzable ester, such as butyl acetate, as a solvent or diluent for the embodiment of Nguyen, as modified by Anderson et al, wherein furfuryl alcohol or furan is the hardenable resin, in the consolidating fluid of the modified process of Nguyen, as taught by Friedman et al or Surles et al, in order to impart improved resin hardening and formation stabilization to the consolidating fluid, e.g., by removing water generated during the resin-setting reaction (note Surles et al, col. 4, line 59 - col. 5, line 14).

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14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nguyen (2002/0070020) in view of Anderson et al (4,042,032), as applied to claim 1 above, and further in view of Copeland (3,857,444).

Copeland (col. 3, lines 30-40) discloses the use of an epoxy hardenable resin for stabilizing a subterranean formation and further disclose the use of an ether, such as ethylene glycol butyl ether, as a solvent or diluent for the epoxy resin.

Accordingly, it would have been obvious to one of ordinary skill in the art to which the invention pertains, to similarly employ an ether, such as ethylene glycol butyl ether, as a solvent or diluent for the embodiment of Nguyen, as modified by Anderson et al, wherein an epoxy resin is the hardenable resin, in the consolidating fluid of the modified process of Nguyen, as taught by Copeland, in order to provide a solvent or diluent which is at least partially soluble in the liquid carrier medium of the consolidating fluid.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

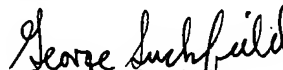
Other references cited disclose processes of consolidating subterranean formations employing exemplary hardenable resin formulations and/or sequential treatment steps.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Suchfield whose telephone number is 571-272-7036. The examiner can normally be reached on M-F (6:30 - 3:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Glessner can be reached on 571-272-6843. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
George Suchfield  
Primary Examiner  
Art Unit 3676

Gs  
July 1, 2005